| Notice of Allowability | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/628,122 | ELLIOT, CANDICE HELLEN BROWN | |
| | Examiner | Art Unit | |
| | Jin-Cheng Wang | 2672 | |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--***

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *1/31/2005*.

2. ☒ The allowed claim(s) is/are *1-5,7-10,12-20,22-25,27-39,42-46 and 51-55*.

3. ☒ The drawings filed on *28 July 2000* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   **Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 08/05/04, 07/21/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

## *EXAMINER'S AMENDMENT*

An examiner's amendment to the record appears below. Should the changes and or additions be unacceptable to the applicants, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Prior to this Office Action, the Examiner has an interview with Mr. KALER, STUART dated June 7, 2005. Applicant agreed with the changes suggested by the Examiner to the claim 12 and 15.

12. (Currently Amended) A three-color pixel element for a display comprising:

a pair of red emitters symmetrically disposed about an origin of a rectangular coordinate system having four quadrants in a first pair of opposing quadrants;

a pair of green emitters symmetrically disposed about said origin of said rectangular coordinate system in a second pair of opposing quadrants; and

a blue emitter disposed at said origin of said rectangular coordinate system, said blue emitter having a larger drive-to-luminance gain than that of each of said red emitters and green emitters;

said blue emitter is polygonal having corners aligned at x and y axes of said rectangular coordinate system;

said red emitters are polygonal, each having an inwardly-facing edge parallel to a side of said polygonal blue emitter; and

said green emitters are polygonal, each having an inwardly-facing edge parallel to a side

of said polygonal blue emitter.

15. (Currently Amended) A three-color pixel element for a display comprising:

a pair of red emitters symmetrically disposed about an origin of a rectangular coordinate system having four quadrants in a first pair of opposing quadrants;

a pair of green emitters symmetrically disposed about said origin of said rectangular coordinate system in a second pair of opposing quadrants; and

a blue emitter disposed at said origin of said rectangular coordinate system, said blue emitter having a larger drive-to-luminance gain than that of each of said red emitters and green emitters;

said blue emitter is square-shaped having sides aligned parallel to x and y axes of said rectangular coordinate system; and

said red emitters and said green emitters are L-shaped and envelop said square blue emitter.

***Reasons for Allowance***

The following is an examiner's statement of reasons for allowance:

Nothing in the prior art anticipates or suggests, "a blue emitter disposed at an origin of a rectangular coordinate system having four quadrants, a pair of red emitters spaced apart from said blue emitter and symmetrically disposed about said origin in a first pair of opposing quadrants of said rectangular coordinate system; a pair of green emitters spaced apart from said blue emitter and symmetrically disposed about said origin in a second pair of opposing quadrants

of said rectangular coordinate system; and wherein each said emitter is connected to a driver and at least two neighboring blue emitters in a row are connected to the same driver" for a three-color pixel element in a display comprising substantially a plurality of three-color pixel elements that form at least one row of said pixel elements system as set forth in the independent Claim 1, the Claim 31, the Claim 39.

The Claim 1 or the Claim 31 or the Claim 39 set forth in the amended claimed invention of 01/31/2005 would provide a three-color pixel element of spaced-apart emitters in which the pixel element consists of a blue emitter disposed at the center of a pair of opposing red and a pair of opposing green emitters and the plurality of pixel elements may be arranged in rows and columns to form a display in which this array provides better perceived resolution and appearance of single full color displays by matching the human vision system. The claim invention would also provide the drive matrix for the pixel array consists of a plurality of rows and columns of the three-color pixel element and the drive matrix consists of a plurality of row and column drivers to drive the individual emitters in which the row drivers drive the red, green and blue emitters in each row, and the red and green emitters in each column are driven by a single column driver and a single column driver drives two columns of blue emitters. Thus, the number of drive lines and associated driver electronics used in the prior art are reduced in the claimed invention.

Nothing in the prior art anticipates or suggests, "a pair of red emitters symmetrically disposed about an origin of a rectangular coordinate system having four quadrants in a first pair of opposing quadrants; a pair of green emitters symmetrically disposed about said origin of said rectangular coordinate system in a second pair of opposing quadrants; and a blue emitter

disposed at said origin of said rectangular coordinate system, said blue emitter having an emitting area larger than that of each of said red emitters and said green emitters; said blue emitter is polygonal having corners aligned at x and y axes of said rectangular coordinate system; said red emitters are polygonal, each having an inwardly-facing edge parallel to a side of said polygonal blue emitter; and said green emitters are polygonal, each having an inwardly-facing edge parallel to a side of said polygonal blue emitter" in a three-color pixel element for a display as set forth in the independent claim 7.

The Claim 7 in the amended claimed invention of 01/31/2005 would provide a three-color pixel element of spaced-apart emitters in which the pixel element consists of a blue emitter disposed at the center of a pair of opposing red and a pair of opposing green emitters and the plurality of pixel elements may be arranged in rows and columns to form a display in which this array provides better perceived resolution and appearance of single full color displays by matching the human vision system.

Nothing in the prior art anticipates or suggests, "a pair of red emitters symmetrically disposed about an origin of a rectangular coordinate system having four quadrants in a first pair of opposing quadrants; a pair of green emitters symmetrically disposed about said origin of said rectangular coordinate system in a second pair of opposing quadrants; and a blue emitter disposed at said origin of said rectangular coordinate system, said blue emitter having an emitting area larger than that of each of said red emitters and said green emitters; said blue emitter is square-shaped having sides aligned parallel to x and y axes of said rectangular coordinate system; and said red emitters and said green emitters are L-shaped and envelop said

square blue emitter" in a three-color pixel elements for a display as set forth in the independent Claim 10, the Claim 25, the Claim 30 and the Claim 34.

The Claim 10 or the Claim 25 or the Claim 30 or the Claim 34 in the amended claimed invention of 01/31/2005 would provide a three-color pixel element of spaced-apart emitters in which the pixel element consists of a blue emitter disposed at the center of a pair of opposing red and a pair of opposing green emitters and the plurality of pixel elements may be arranged in rows and columns to form a display in which this array provides better perceived resolution and appearance of single full color displays by matching the human vision system.

Nothing in the prior art anticipates or suggests the claim limitations set forth in the Claim 16, "A display comprising substantially a plurality of three-color pixel elements that form at least one row of pixel elements, said three-color pixel element comprising:

a pair of red emitters, outer corners of each forming a first two opposing corners of a square; a pair of green emitters, outer corners of each forming a second two opposing corners of said square; a blue emitter disposed at a center of said square; and wherein each said emitter is connected to a driver and at least two neighboring blue emitters in a same row are connected to the same driver."

The Claim 16 in the amended claimed invention of 01/31/2005 would provide a three-color pixel element of spaced-apart emitters in which the pixel element consists of a blue emitter disposed at the center of a pair of opposing red and a pair of opposing green emitters and the plurality of pixel elements may be arranged in rows and columns to form a display in which this array provides better perceived resolution and appearance of single full color displays by matching the human vision system.

Nothing in the prior art anticipates or suggests the claim limitations set forth in the Claim 22 and Claim 27, "A three-color pixel element in a shape of a square for a display comprising: a pair of red emitters, outer corners of each forming a first two opposing corners of a square; a pair of green emitters, outer corners of each forming a second two opposing corners of said square; and a blue emitter disposed at a center of said square, wherein said blue emitter having an emitting area larger than that of each of said red emitters and said green emitters;
Said blue emitter disposed at said center of said square and is polygonal having sides aligned such that imaginary lines perpendicularly bisecting each side pass through corners of said polygon; said red emitters are polygonal, each having an inwardly-facing edge parallel to an edge of said polygonal blue emitter; and said green emitters are polygonal, each having an inwardly-facing edge parallel an edge of said polygonal blue emitter."

The Claim 22 or the Claim 27 in the amended claimed invention of 01/31/2005 would provide a three-color pixel element of spaced-apart emitters in which the pixel element consists of a blue emitter disposed at the center of a pair of opposing red and a pair of opposing green emitters and the plurality of pixel elements may be arranged in rows and columns to form a display in which this array provides better perceived resolution and appearance of single full color displays by matching the human vision system.

Nothing in the prior art anticipates or suggests, "In an array of three-color pixel elements, a row structure comprising: first and second three-color pixel elements, each three-color pixel element including first and second red emitters, first and second green emitters, and a blue emitter; first and second row line drivers; a first row line coupled to said first row line driver, said first row line coupled to said blue emitter of said second three-color pixel element, and said

first red emitter and said first green emitter of said first and said second three-color pixel element; a second row line coupled to said second row line driver, said second row line coupled to said blue emitter of said first three-color pixel element, sand said second red emitter and said second green emitter of said first and said second three-color pixel element; first through fifth column line drivers; a first column line coupled to said first column line driver, said first column line coupled to said first red emitter and said second green emitter of said first three-color pixel element; a second column line coupled to said second column line driver, said second column line coupled to said blue emitter of said first and said second three-color pixel element; a third column line coupled to said third column line driver, said third column line coupled to said second red emitter and said first green emitter of said first three-color pixel element; a fourth column line coupled to said fourth column line driver, said fourth column line coupled to said first red emitter and said second green emitter of said second three-color pixel element; and a fifth column line coupled to said fifth column line driver, said fifth column line coupled to said second red emitter and said first green emitter of said second three-color pixel element" as set forth in the independent Claim 37 and 38.

The Claim 37 or 38 set forth in the amended claimed invention of 01/31/2005 would provide a three-color pixel element of spaced-apart emitters in which the pixel element consists of a blue emitter disposed at the center of a pair of opposing red and a pair of opposing green emitters and the plurality of pixel elements may be arranged in rows and columns to form a display in which this array provides better perceived resolution and appearance of single full color displays by matching the human vision system. The claim invention would also provide the drive matrix for the pixel array consists of a plurality of rows and columns of the three-color

pixel element and the drive matrix consists of a plurality of row and column drivers to drive the individual emitters in which the row drivers drive the red, green and blue emitters in each row, and the red and green emitters in each column are driven by a single column driver and a single column driver drives two columns of blue emitters. Thus, the number of drive lines and associated driver electronics used in the prior art are reduced in the claimed invention.

Nothing in the prior art anticipates or suggests the claim limitations set forth in the Claim 42 and Claim 51, "A display substantially comprising a plurality of three-color pixel elements, each three-color pixel element comprising: a blue emitter; a pair of red emitters; a pair of green emitter such that said red emitters and said green emitters form substantially a checkerboard pattern upon said display; and wherein at least two neighboring blue emitters in a same row of at least two three-color pixel elements are connected to a same driver."

The Claim 42 or the Claim 51 in the amended claimed invention of 01/31/2005 would provide a three-color pixel element of spaced-apart emitters in which the pixel element consists of a blue emitter disposed at the center of a pair of opposing red and a pair of opposing green emitters and the plurality of pixel elements may be arranged in rows and columns to form a display in which this array provides better perceived resolution and appearance of single full color displays by matching the human vision system.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665. The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Razavi can be reached on (571) 272-7664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jcw

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